shaft without the use of any retaining structure that is fixed to said free swinging eccentric weight,

wherein said rigid free swinging eccentric weight is restrained from substantial axial movement along said exciter shaft by two separate exciter components that are individually mounted on opposite sides of said free swinging eccentric weight in a non-abutting relationship relative to one another.

## REMARKS

Entry of the amendments is respectfully requested. Claims 1-5, 7-18, 20-22, 24, 26-28, and 30 have been amended. New claim 31 has been added. Claims 1-31 are pending in the application. Favorable reconsideration and allowance of this application is respectfully requested in light of the foregoing amendments and the remarks that follow.

1. Amendments to the Specification

The specification has been amended per the Examiner's request to replace reference Patent Number 4,613,133 with 5,618,133. In addition, the specification has been amended to correct minor typographical errors found upon a review of the application.

2. Rejection Under §112, Second Paragraph

Claims 1-30 stand rejected under 35 U.S.C. §112, ¶2. Claims 1-5, 7-18, 20-22, 26-28, and 30 have been amended to obviate this rejection and to correct minor

typographical errors found upon a review of the application. Specifically, the claims have been amended to provide consistent language for the fixed eccentric weight and the free swinging eccentric weight. Claim 7 was amended to replace "motor output shaft" with --rotary output shaft--. Claim 8 was amended to replace "said eccentric weights" with --said fixed eccentric weight-- and --said free swinging eccentric weight--.

Claim 9 was amended to clarify that the initial exciter shaft, fixed eccentric weight, and free swinging eccentric weight (originally of claim 1) are all "first" of these and that the subsequent ones (of claim 9) are all "second" of these.

Claims 10 and 11 were amended to replace "eccentric shaft" with --exciter shaft --.

Claim 11 was amended to provide proper antecedent basis for "first and second free swinging eccentric weights."

Claim 12 was amended to provide better antecedent basis for the claimed bearings and to provide consistent language for "said first end".

Claim 13, line 3, was amended to replace "said first eccentric weight" with --said first fixed eccentric weight--. In addition, in lines 13-14, "said first fixed eccentric weight" was replaced with --said second fixed eccentric weight--. Additionally, claim 13 was amended to provide proper antecedent basis for "said torque transfer element" and "said first torque transfer element," to provide consistent language for the bearings, and to eliminate any indefiniteness about the "exciter shaft" in line 13.

Claim 14 was amended to provide consistent language for "at least one drum assembly," to provide antecedent basis for "a width of a strip to be compacted," to

provide consistent language for "first and second free swinging eccentric weights," to change the verbs "adds" and "detracts" to the correct singular tense.

Claim 15 was amended to provide consistent language for "first and second free swinging eccentric weights."

Claim 16 was amended to provide consistent language for the second bearings.

Claim 17 was amended to provide consistent language for "vibratory roller" and "rotary output shaft."

Claim 20 has been amended to replace "said fixed weight" with --said fixed eccentric weight--. Proper antecedent basis exists from "fixing an eccentric weight" in line 5 of claim 20. Thus, no further claim amendment is believed to be necessary. In addition, in claim 20, line 11 has been amended to replace "respective ends" with --said respective ends--.

Claim 21 was amended to clarify the relationship between the claimed bearings and the remaining components of the system.

Claim 22 was amended to provide consistent language for the bearings.

Claims 24 and 27 have been amended to replace "without any hardware" with --without any *mounting* hardware--. An example of mounting hardware, i.e., ring retainers used in the prior art is described on page 3, lines 12-16. Those skilled in the art will understand that other types of mounting hardware can be used on exciters, and that in the invention of claims 24 and 27, no such hardware is used. Therefore, the claim is believed to be definite.

Claim 28 was amended to correct a typographical error related to "said bearing," to provide proper antecedent basis for "said torque transfer element," to provide proper antecedent basis for "a second exciter assembly," and to provide consistent language for "at least two bearings of said second exciter shaft." In addition, "an opening" in line 19 was replaced with --said opening--.

Claim 30 was amended to provide consistent language for "said trench roller."

These amendments in no way are believed to narrow the scope of the claims and are for clarification purposes only. In light of the amendments and the foregoing arguments, withdrawal of this rejection is requested.

3. Rejections Based on the Prior Art

a. Recapitulation of the Invention[1]

The invention relates to a lightweight, easy to assemble, and compact exciter assembly for a compaction device such as a drum assembly of a vibratory trench roller or another vibratory compactor. The exciter assembly includes a fixed weight and one or more free swinging weights that can be mounted on an exciter shaft, without using any mounting hardware, so as to hold the free swinging weights axially in position while permitting them to swing between first and second angular positions on the exciter shaft. Preferably, the fixed weight is mounted on a central portion of the exciter shaft, and two free swinging weights are mounted adjacent the ends of the fixed weight so as to be restrained from substantial sliding movement along the exciter shaft solely by the fixed

[1] This Section 3a is intended to provide the Examiner with some background information on the state of the art applicants' contribution to it. It is *not* intended to distinguish specific claim for the prior art. That task is performed in Section 3b below.

weight and other operative components of the exciter assembly, such as bearings and/or gears or other torque transfer elements. The reduction in length afforded by this design permits a reversible hydraulic motor to be mounted coaxially on the end of the exciter shaft without unacceptably increasing the overall length of a drum assembly, thereby further simplifying the machine's assembly and facilitating maintenance or repair of the machine.

b. Rejection of Claims 1, 5 and 8 Under § 102(b)

Claims 1, 5, and 8 stand rejected under § 102(b) as being anticipated by Stanton (U.S. Patent No. 4,586,847). The applicants respectfully traverse this rejection because, as is discussed below, the Stanton patent does not disclose each and every element of the novel subject matter disclosed and set forth in amended claim 1. Therefore, reconsideration is in order and is respectfully requested.

Claim 1 has been amended to require a rigid free swinging eccentric weight that rotates about the exciter shaft as a unit. This element clearly is not disclosed in Stanton. Instead, the Stanton patent discloses a vibrating roller that has a fluent mass 33 that is accommodated inside a sealed, hollow capsule or casing of vibratory units 27 and 28. The fluent mass 33 is formed from a number of moveable weights, such as metal members, steel balls, metal shot, liquid metal, sand, and the like flowable ballast material. (col. 3, line 64 to col. 4, line 12). The vibrating roller of Stanton also includes a front drum and a rear drum, each of which has a shaft 5. (col. 3, lines 16-22). Vibratory units

27 and 28 are mounted on the shafts 4. In addition, a pair of weights 25 and 26 are mounted on shaft 5 adjacent the opposite ends thereof. Weights 25 and 26 have eccentrically located masses which cause shaft 5 to vibrate when it is rotated. (col. 3, lines 56-59). Hence, it can be seen that Stanton's fluent mass 33 is neither rigid as claimed nor rotates as a unit as claimed.

Dependent claims 5 and 8 are believed to be in condition for allowance for incorporating by reference the limitations of claim 1 and for defining additional features of the invention, which, when considered in combination with those of claim 1, are neither disclosed nor suggested by the prior art relied upon in the rejection.

Thus, the references alone or in combination fail to teach or suggest an exciter assembly with a rigid free swinging eccentric weight that rotates about the exciter shaft as a unit, as is required by these claims. Therefore, withdrawal of the rejection of claims 1, 5, and 8 is respectfully requested.

c. Rejection Under § 103

i. The Rejection of Claims 6 and 7

The rejection of Claims 6 and 7 as unpatentable over Stanton in view of Century (U.S. Patent No. 3,561,336) is respectfully traversed, because, *inter alia*, there is no teaching or suggestion to combine or modify the references to produce the claimed invention. MPEP §2143.01. The Examiner correctly recognizes that Stanton fails to show a motor having a rotary output shaft which is coupled to the exciter shaft and which

is co-axial with exciter shaft, the motor output shaft being splined directly to the exciter shaft. The Examiner then cites Century to cure this deficiency.

As the Examiner correctly recognizes, Stanton is silent about a motor having a rotary output shaft. Stanton also lacks a discussion about the desirability of using a rotary shaft configured as claimed. Thus it is only through impermissible hindsight, gleaned only from the applicants' disclosure, that the invention would result. Moreover, Century also fails to disclose the claimed rigid free swinging eccentric weight.

In light of the foregoing, withdrawal of this rejection is requested.

ii. Rejection of Claim 4

The rejection of claim 4 as unpatentable over Stanton in view of Lebrero Martinez (U.S. Patent No. 3,892,496) is respectfully traversed, because, *inter alia*, there is no teaching or suggestion to modify or combine the references to produce the invention of amended claim 4. MPEP §2143.01. Furthermore, even if the references were combined, the invention of amended claim 4 would not result. Claim 4 has been amended to require that "said free swinging eccentric weight is sandwiched between a first end of said fixed eccentric weight and a component comprising one of a torque transfer element and a bearing." The Examiner correctly recognizes that Stanton lacks a free swinging weight having a tab extending over an adjacent end of the fixed weight and that engages a first side of the fixed weight when the free swinging weight is in the first angular position and that engages a second side of the fixed weight when the free swinging weight is in the

second angular position. The Examiner cites the Lebrero Martinez patent to cure this deficiency.

The Lebrero Martinez patent fails to disclose a free swinging weight that is sandwiched between a first end of a fixed eccentric weight and a component, as is required by amended claim 4. Instead, the Lebrero Martinez discloses a vibrating roller that includes an outer body 2 that has an additional massive body 3, which are mounted on a shaft 1. The outer body 2 defines inside thereof a housing for bodies 3. Thus, even if the references were combined, the combination would lack a free swinging eccentric weight that is sandwiched between a first end of said fixed eccentric weight and a component comprising one of a torque transfer element and a bearing.

In light of the amendment and the foregoing, withdrawal of the rejection of claim 4 is respectfully requested.

4. Allowable Claims and New Claim

The applicants gratefully acknowledge the indication that claims 2-3, 9-11, 13, 15-19, 21-26, and 28-30 would be allowable if rewritten to overcome the rejections under 35 U.S.C. §112, second paragraph, and to include all of the limitations of the base claim and any intervening claims. As is discussed above in Section 2, all of the §112, second paragraph rejections have been obviated.

Claim 2 has been rewritten to be independent form to include the limitations of claim 1. Claim 3 depends from claim 2.

Claim 9 has been rewritten in independent form to include the limitations of claim 1. Claims 10-11 depend from claim 9.

Claim 13 depends from claim 12, which has been indicated as being allowable if amended to overcome the rejections under 35 U.S.C. §112, second paragraph.

Claims 15-19 depend from claim 14, which has been amended to overcome the §112 rejection.

Claims 21-26 depend from claim 20, which has been indicated as being allowable if rewritten to overcome the §112 rejection.

Claims 28-30 depend from claim 27, which has been indicated as being allowable if rewritten or amended to overcome the rejections under §112.

In addition, the applicants gratefully acknowledge the indication that claims 12, 14, 20, and 27 would be allowable if they are amended to overcome the rejections under 35 U.S.C. §112, second paragraph, the claims have been so amended.

New claim 31 has been added. New claim 31 includes all of the limitations of claim 1 and additional limitations, which when considered in combination with those of claim 1, are neither disclosed or suggested by the prior art of record.

## CONCLUSION

It is submitted that original claims 1-30 and newly presented claim 31 are in compliance with 35 U.S.C. §§ 112, 102, and 103 and each define patentable subject matter. A Notice of Allowance is therefore respectfully requested.

Enclosed is a check in the amount of $246 in payment for the fee required for the submission of three additional independent claims in excess of three by a large entity. No additional fee is believed to be payable with this communication. Nevertheless, should the Examiner consider any other fees to be payable in conjunction with this or any future communication, the Director is authorized to direct payment of such fees, or credit any overpayment to Deposit Account No. 50-1170.

The Examiner is invited to contact the undersigned by telephone if it would help expedite matters.

Respectfully submitted,

Timothy Newholm
Registration No. 34,400

Dated: September 5, 2002

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

Amended Claims

1. (Amended) An exciter assembly for a vibratory roller, comprising:

(A) an exciter housing;

(B) an exciter shaft rotatably journaled in said exciter housing;

(C) a fixed eccentric weight rotationally fixed to said exciter shaft;

(D) a rigid free swinging eccentric weight mounted on said exciter shaft so as to rotate as a unit with respect to said exciter shaft between 1) a first angular position in which the eccentricity of said rigid free swinging eccentric weight adds to the eccentricity of said fixed eccentric weight and 2) a second angular position in which the eccentricity of said rigid free swinging eccentric weight detracts from the eccentricity of said fixed eccentric weight, wherein said rigid free swinging eccentric weight is mounted on said exciter shaft so as to be restrained from substantial axial movement along said exciter shaft without the use of any retaining structure that is fixed to said rigid free swinging eccentric weight.

2. (Amended) ~~The exciter assembly as recited in claim 1~~ An exciter assembly for a vibratory roller, comprising:

(A) an exciter housing;

(B) an exciter shaft rotatably journaled in said exciter housing;

(C) a fixed eccentric weight rotationally fixed to said exciter shaft;

(D) a free swinging eccentric weight mounted on said exciter shaft so as to rotate with respect to said exciter shaft between 1) a first angular position in which the eccentricity of said free swinging eccentric weight adds to the eccentricity of said fixed eccentric weight and 2) a second angular position in which the eccentricity of said free swinging eccentric weight detracts from the eccentricity of said fixed eccentric weight, wherein said free swinging eccentric weight is mounted on said exciter shaft so as to be restrained from substantial axial movement along said exciter shaft without the use of any retaining structure that is fixed to said free swinging eccentric weight, wherein said free swinging eccentric weight is sandwiched between a first end of said fixed eccentric weight and a component comprising one of a torque transfer element and a bearing and is restrained from substantial axial movement along said exciter shaft solely by said first end of said fixed eccentric weight and said component.

3. (Amended) The exciter assembly as recited in claim 2, wherein said free swinging eccentric weight is a first free swinging eccentric weight, and further comprising a second free swinging eccentric weight mounted on said exciter shaft so as to rotate with respect to said exciter shaft between 1) a first angular position in which the eccentricity of said second free swinging eccentric weight adds to the eccentricity of said fixed weight and 2) a second angular position in which the eccentricity of said second free swinging eccentric weight detracts from the eccentricity of said fixed eccentric weight, wherein said second free swinging eccentric weight is located axially between a second end of said fixed eccentric weight and another component comprising the other

of said torque transfer element and said bearing and is restrained from substantial axial movement along said exciter shaft by said second end of said fixed eccentric weight and said another component, respectively.

4. (Amended) The exciter assembly as recited in claim 1, wherein said free swinging eccentric weight is sandwiched between a first end of said fixed eccentric weight and a component comprising one of a torque transfer element and a bearing that is axially spaced from said fixed eccentric weight, and

wherein said free swinging eccentric weight has a tab that extends over an adjacent axial end of said fixed eccentric weight and that engages a first side of said fixed eccentric weight when said free swinging eccentric weight is in said first angular position and that engages a second side of said fixed eccentric weight when said free swinging eccentric weight is in said second angular position.

5. (Amended) The exciter assembly as recited in claim 1, wherein said fixed eccentric weight is formed integrally with said exciter shaft.

7. (Amended) The exciter assembly as recited in claim 6, wherein said ~~motor~~ rotary output shaft is splined directly to said exciter shaft.

8. (Amended) The exciter assembly a recited in claim 1, further comprising

a drum which surrounds said exciter housing, which is rotationally supported on a surface to be compacted, and which is excited to vibrate by said fixed eccentric weight and said rigid free swinging eccentric weight.

9. (Amended) ~~The exciter assembly as recited in claim 1~~An exciter assembly for a vibratory roller, comprising:

(A) an exciter housing;

(B) a first exciter shaft rotatably journaled in said exciter housing;

(C) a first fixed eccentric weight rotationally fixed to said exciter shaft;

(D) a first free swinging eccentric weight mounted on said exciter shaft so as to rotate with respect to said exciter shaft between 1) a first angular position in which the eccentricity of said first free swinging eccentric weight adds to the eccentricity of said first fixed eccentric weight and 2) a second angular position in which the eccentricity of said first free swinging eccentric weight detracts from the eccentricity of said first fixed eccentric weight, wherein said first free swinging eccentric weight is mounted on said first exciter shaft so as to be restrained from substantial axial movement along said first exciter shaft without the use of any retaining structure that is fixed to said first free swinging eccentric weight, ~~wherein said exciter shaft and said fixed weight comprise a first exciter shaft and a first fixed eccentric weight, respectively, and further comprising~~

(E) a second exciter shaft rotatably journaled in said exciter housing~~,~~;

(F) a second fixed eccentric weight rotationally fixed to said second exciter shaft~~,~~; and

(G) a second free swinging eccentric weight mounted on said second exciter shaft so as to rotate with respect to said second exciter shaft between 1) a first angular position in which the eccentricity of said second free swinging eccentric weight adds to the eccentricity of said second fixed eccentric weight and 2) a second angular position in which the eccentricity of said second free swinging eccentric weight detracts from the eccentricity of said second fixed eccentric weight, wherein said second free swinging eccentric weight is mounted on said second exciter shaft so as to be restrained from substantial axial movement along said second exciter shaft without the use of any retaining structure that is fixed to said second free swinging eccentric weight.

10. (Amended) The exciter assembly as recited in claim 9, further comprising

a drive element which is mounted on said first ~~eccentric~~ exciter shaft such that said free swinging eccentric weight on said first exciter shaft is restrained from substantial axial movement along said first exciter shaft solely by said first fixed eccentric weight and by said drive element, and

a driven element which is mounted on said second ~~eccentric~~ exciter shaft such that said free swinging eccentric weight on said second exciter shaft is restrained from substantial axial movement along said second exciter shaft solely by said second fixed eccentric weight and by said driven element, and wherein said drive element is coupled to said driven element so as to transfer drive torque thereto.

11. (Amended) The exciter assembly as recited in claim 10, wherein said free swinging eccentric weight is a first free swinging eccentric weight, and

wherein said fixed eccentric weight is a first fixed eccentric weight, and

further comprising

a first bearing which supports said first exciter shaft on said exciter housing;

awherein said first free swinging eccentric weight is mounted on said first exciter shaft between said first fixed eccentric weight and said first bearing and which is restrained from substantial axial movement along said first exciter shaft solely by said first fixed eccentric weight and said first bearing, respectively;

a second bearing which supports said second exciter shaft on said exciter housing; and

a second free swinging eccentric weight mounted on said second exciter shaft between said second fixed eccentric weight and said second bearing and which is restrained from substantial axial movement along said second exciter shaft solely by said second fixed eccentric weight and said second bearing, respectively.

12. (Amended) An exciter assembly that is configured to impart vibrations to a rotating drum assembly of a vibratory roller, comprising:

(A) an exciter housing which is formed integrally with an axle housing of the rotating drum assembly;

(B) an exciter shaft which is rotatably journaled in said exciter housing by at least first and second ~~two~~ bearings;

(C) a fixed eccentric weight which is rotationally fixed to said exciter shaft;

(D) a first free swinging eccentric weight which is sandwiched between a first end of said fixed eccentric weight and ~~one of said bearings~~ said first bearing and which is restrained from substantial axial movement along said exciter shaft solely by said fixed eccentric weight and said ~~one~~ first bearing;

(E) a second free swinging eccentric weight 1) which is sandwiched between said ~~a~~ first end of said fixed eccentric weight and a component consisting of a) ~~another of said bearings~~ said second bearing and b) a torque transfer element fixed to said exciter shaft and 2) which is restrained from substantial axial movement along said exciter shaft solely by said fixed eccentric weight and said component.

13. (Amended) The exciter assembly as recited in claim 12, wherein said exciter shaft is a first exciter shaft, said fixed eccentric weight is a first fixed eccentric weight, and said second free eccentric weight is sandwiched between said first fixed eccentric weight and first torque transfer element which is fixedly mounted on said first exciter shaft, and further comprising

a second exciter shaft which is rotatably journaled in said exciter housing by at least ~~two~~ third and fourth bearings;

a second torque transfer element which is fixedly mounted on said second exciter shaft and operatively coupled to said first torque transfer element;

a second fixed eccentric weight which is rotationally fixed to said second exciter shaft;

a third free swinging eccentric weight which is sandwiched between a first end of said second fixed eccentric weight and ~~one of said bearings on said second exciter shaft~~ said third bearing and which is restrained from substantial axial movement along said second exciter shaft solely by said ~~first~~ second fixed eccentric weight and said ~~one bearing~~third bearing; and

a fourth free swinging eccentric weight which is sandwiched between a second end of said second fixed eccentric weight and said second torque transfer element and which is restrained from substantial axial movement along said second exciter shaft solely by said second fixed eccentric weight and said second torque transfer element.

14. (Amended) A vibratory roller comprising:

(A) a chassis;

(B) ~~at least one~~ a drum assembly supporting said chassis on a surface to be compacted, said drum assembly being hollow and having a length corresponding to ~~the~~ a width of a strip to be compacted, said drum assembly comprising an axle housing and a drum rotatably supported on said axle housing via an axle; and

(C) an exciter assembly which imparts vibrations to said drum and which is fully contained within said drum, said exciter assembly comprising:

(1) an exciter housing located within said axle housing,

(2) an exciter shaft rotatably journaled in said exciter housing by ~~at~~

~~least~~ first and second bearings,

(3) a fixed eccentric weight rotationally fixed to said exciter shaft,

(4) first and second free swinging eccentric weights, each of which is mounted on said exciter shaft so as to rotate with respect to said exciter shaft between 1) a first angular position in which the eccentricity of said first and second free swinging eccentric weights adds to the eccentricity of said fixed eccentric weight and 2) a second angular position in which the eccentricity of said first and second free swinging eccentric weights detracts from the eccentricity of said fixed eccentric weight, and

(5) a motor having a rotary output shaft which is coupled to said exciter shaft and which is co-axial with said exciter shaft.

15. (Amended) The vibratory roller as recited in claim 14, wherein each of said first and second free swinging eccentric weights is mounted on said exciter shaft between a respective end of said fixed eccentric weight and an adjacent component of said exciter assembly so as to be restrained from substantial axial movement along said exciter shaft without the use of any retaining structure that is fixed to said first and second free swinging eccentric weights.

16. (Amended) The vibratory roller as recited in claim 15, wherein said first free swinging eccentric weight is sandwiched between said fixed eccentric weight and one of said first and second bearings and said second free swinging eccentric weight is

sandwiched between said fixed eccentric weight and a torque transfer element affixed to said exciter shaft.

17. (Amended) The vibratory roller as recited in claim 14, wherein said vibratory roller is a vibratory trench roller, and wherein said ~~motor~~ rotary output shaft is splined directly to said exciter shaft.

18. (Amended) The vibratory roller as recited in claim 14, wherein said fixed eccentric weight is formed integrally with said exciter shaft.

20. (Amended) A method of assembling an exciter assembly for a compaction machine comprising:

(A) fixing a torque transfer element ~~and at least two bearings~~ and a bearing to an exciter shaft;

(B) fixing an eccentric weight to said exciter shaft;

(C) mounting first and second free swinging eccentric weights on said exciter shaft adjacent respective ends of said fixed eccentric weight so as to be rotatable a limited amount relative to said exciter shaft;

(D) restraining said first and second free swinging eccentric weights from substantial axial movement along said exciter shaft solely by sandwiching said first and second free swinging eccentric weights between said respective ends of said fixed eccentric weight and operative components of said exciter assembly, each of said

operative components comprising one of ~~a~~ said bearing and ~~a~~ said torque transfer element.

21. (Amended) The method as recited in claim 20, wherein the step of axially restraining said first and second free swinging eccentric weights comprises sandwiching said first free swinging eccentric weight between said fixed eccentric weight and ~~one of~~ said bearings - and sandwiching said second free swinging eccentric weight between said fixed eccentric weight and ~~a~~ said torque transfer element.

22. (Amended) The method as recited in claim 21, wherein said exciter shaft is a first exciter shaft, said fixed eccentric weight is a first fixed eccentric weight, said bearing is a first bearing, and said torque transfer element is a first torque transfer element, and further comprising:

fixing a second torque transfer element and ~~at least two bearings~~ a second bearing to a second exciter shaft;

fixing a second eccentric weight to said second exciter shaft;

mounting third and fourth free swinging eccentric weights on said second exciter shaft adjacent respective ends of said second fixed eccentric weight so as to be rotatable a limited amount relative to said second exciter shaft;

restraining said third free swinging eccentric weight from substantial axial movement along said second exciter shaft solely by sandwiching said third free swinging

eccentric weight between said second fixed eccentric weight and ~~one of~~ said second bearings~~s~~; and

restraining said fourth free swinging eccentric weight from substantial axial movement along said second exciter shaft solely by sandwiching said fourth free swinging eccentric weight between said second fixed eccentric weight and said second torque transfer element.

24. (Amended) The method as recited in claim 20, wherein all of the fixing steps are performed without the use of any mounting hardware.

26. (Amended) The method as recited in claim 24, wherein the step of fixing said fixed eccentric weight to said exciter shaft comprises forming said fixed eccentric weight integrally with said exciter shaft.

27. (Amended) A method comprising:

(A) assembling an exciter assembly by

(1) fixing a torque transfer element and ~~at least two~~ a bearings~~s~~ to an exciter shaft without using any hardware,

(2) fixing an eccentric weight to said exciter shaft without using any mounting hardware,

(3) mounting first and second free swinging eccentric weights on said exciter shaft adjacent respective ends of said fixed eccentric weight so as to be rotatable a limited amount relative to said exciter shaft, and

(4) restraining said first and second free swinging eccentric weights from substantial axial movement along said exciter shaft solely by sandwiching said first and second free swinging eccentric weights between respective ends of said fixed eccentric weight and operative components of said exciter assembly, each of said operative components comprising one of ~~a~~ said bearing and ~~a~~ said torque transfer element; then

(B) inserting said exciter assembly axially into an opening in an exciter housing and mounting said exciter assembly in said exciter housing;

(C) mounting said exciter assembly on a trench roller in operative communication with a rotatable drum assembly that supports said trench roller on a surface to be compacted.

28. (Amended) The method as recited in claim 27, wherein the step of axially restraining said first and second free swinging eccentric weights comprises sandwiching said first free swinging eccentric weight between said fixed eccentric weight and ~~one of~~ said bearings and sandwiching said second free swinging eccentric weight between said fixed eccentric weight and ~~a~~ said torque transfer element, and wherein said exciter shaft is a first exciter shaft, said fixed eccentric weight is a first fixed eccentric weight, said bearing is a first bearing, said opening in said exciter housing is a first opening, and said

torque transfer element is a first torque transfer element, and further comprising assembling a second exciter assembly by:

fixing a second torque transfer element and at ~~least two bearings~~ a second bearing to a second exciter shaft,

fixing a second eccentric weight to said second exciter shaft,

mounting third and fourth free swinging eccentric weights on said second exciter shaft adjacent respective ends of said second fixed eccentric weight so as to be rotatable a limited amount relative to said second exciter shaft,

restraining said third free eccentric weight from substantial axial movement along said second exciter shaft solely by sandwiching said third free swinging eccentric weight between said second fixed eccentric weight and ~~one of~~ said second bearings,

restraining said fourth free swinging eccentric weight from substantial axial movement along said second exciter shaft solely by sandwiching said fourth free swinging eccentric weight between said second fixed eccentric weight and said second torque transfer element, and

inserting said second exciter assembly axially into ~~an~~ a second opening in said exciter housing and mounting said second exciter assembly in said exciter housing.

30. (Amended) The method as recited in claim 27, wherein the inserting step comprises inserting the exciter assembly into an exciter housing that is formed integrally with an axle housing of said trench roller.

VERSION WITH MARKINGS TO SHOW CHANGES MADE

Amended Specification Paragraphs

*Paragraph beginning on page 2, starting at line 13:*

Many vibratory trench rollers and some other vibratory compactors require that the amplitude of the vibrations generated by the machine's exciter assembly be varied. For instance, it is often desirable to generate relatively low amplitude vibrations during machine start and stop operations to reduce the likelihood of disturbing the freshly compacted surface and to otherwise generate higher amplitude vibrations to maximize compaction. To achieve this effect, many vibratory trench rollers incorporate a so-called "dual amplitude exciter." A dual amplitude exciter typically has multiple eccentric weights mounted on its rotatable shaft. A first, relatively massive eccentric weight is fixed to the shaft so as to rotate with it. One or more additional, less massive eccentric weights are mounted on the shaft so as to be swingable on it between at least two angular positions. Each of these "free swinging" weights has a tab or other structure that limits the range of rotation relative to the fixed weight when the exciter shaft rotates in a particular direction. When the exciter shaft is driven in a first direction, each free swinging weight swings to a first angular position on the exciter shaft in which its eccentricity adds to the eccentricity of the fixed weight, generating high amplitude vibrations. Conversely, when the exciter shaft is rotated in the opposite direction, each free swinging weight swings to a second angular position on the exciter shaft in which its eccentricity detracts from the eccentricity of the fixed weight, thereby generating low amplitude vibrations. Dual amplitude exciters are disclosed, e.g., in U.S. Patent No. 4,830,534 to Schmelzer et al. and U.S. Patent No. ~~4,618,133~~ 5,618,133 to Mitsui et al.

*Paragraph beginning on page 6, starting at line 5:*

One possible application for the inventive exciter assembly is a vibratory roller used to compact trenches or other surfaces. In this case, and in accordance with another aspect of the invention, the vibratory roller comprises a chassis, at least one drum assembly supporting the chassis on a surface to be compacted, and an exciter assembly. The drum assembly is hollow and has a length corresponding to the width of strip to be compacted. It includes an axle housing and a drum rotatably supported on the axle housing via an axle. The exciter assembly is of the type described above in conjunction with the first aspect of the invention.

*Paragraph beginning on page 10, line 16:*

Specifically, referring to Figs. 3 and 4, the front drum assembly 14 includes an axle housing 34 that includes a pair of drum sections 36 and 38. The drum sections 36 and 38 surround opposite sides of the axle housing 34 and are mounted on the axle housing 34 by a common axle 40.